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Acute Coronary Syndromes

PLASMA OSMOLALITY PREDICTS CLINICAL OUTCOME IN PATIENTS ADMITTED WITH ACUTE CORONARY SYNDROME UNDERGOING PCI AND STENT IMPLANTATION

Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 3:45 p.m.-4:30 p.m.

Session Title: The Blood Tells a Story: Coeptin, Fatty Acid Binding Protein, NT-Pro BNP and More
Abstract Category: 1. Acute Coronary Syndromes: Clinical
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Background: The utilization of plasma osmolality as unspecific marker for endogenous stress, predicting clinical outcome in the context of acute coronary syndrome (ACS), has not been investigated so far.

Methods: In a retrospective analysis we included 985 consecutive patients with ACS, who were referred for percutaneous coronary intervention (PCI) + stenting. Plasma osmolality was calculated using concentrations of sodium, plasma glucose and blood urea nitrogen at admission. In addition, peak levels of creatine kinase-myocardial band isoenzyme fraction (CK-MB) were measured. As primary endpoint, in-hospital mortality from all causes was evaluated for each quartile of osmolality and compared between groups. As secondary endpoint, myocardial injury was evaluated comparing peak levels of CK-MB between groups.

Results: Median osmolality was 283 mosmol/kg (IQR 279;287), rates of in-hospital death were 9 (3.7 %), 9 (3.7%), 6 (2.4 %) and 41 (16.6 %) for Quartile (Q)1 to Q4, respectively. Since similar rates of death for Q1-Q3 were observed (p=0.8), those groups were combined for further analysis. Univariate analysis in the cox proportional-hazards model revealed significantly higher rates of in-hospital death for patients in Q4, as compared to Q1-Q3 (HR 5.4, 95% CI 3.3;9.0, p<0.01). After adjustment for confounding baseline variables (age, renal failure, diabetes, peripheral vascular disease, smoking, heart failure and history for malignancies) osmolality in Q4 was associated with 3.7-fold hazard of in-hospital death (HR 3.7, 95% CI 1.9;7.0, p<0.01). Moreover, peak levels of CK-MB were significantly higher in Q4, as opposed to Q1-Q3 (median 150.0 U/l vs. 187.5 U/l, p=0.02).

Conclusion: Using the 4th quartile of plasma osmolality at admission as a natural cut-off point, osmolality in Q4, as compared to Q1-Q3, was highly predictive of in-hospital outcome in ACS patients undergoing coronary stenting. Our data suggests osmolality to be a feasible and cost-effective marker for predicting in-hospital death in ACS patients. Keeping in mind all limitations of a retrospective analysis, further investigations are needed to confirm these results and to determine underlying mechanisms.